

ABSTRACT OF THE DISCLOSURE

The present invention provides apparatuses and methods for performing minimally invasive diagnostic and surgical procedures inside of a beating heart. An assembly for use in performing such a medical procedure includes a port and a fluid transport device. The port has a housing configured for insertion through a chamber wall of a heart chamber, at least one valve disposed in the housing, and an inlet connected to the housing. The inlet has an inlet passage in fluid communication with a lumen of the housing. The fluid transport device has an end that attaches to the inlet of the port, another end that attaches to a fluid source, and a fluid channel therebetween to pass a fluid from the fluid source to the heart chamber. A method of preparing a beating heart for a diagnostic or medical procedure comprises the steps of inserting a cardiac port through a chamber wall of the beating heart and pressurizing the heart chamber with blood from the patient's artery. Repair of the heart's mitral valve can be effected by a stapled annuloplasty procedure. Where sutures are used in the diagnostic or surgical procedure, a suture cutting device for cutting a suture inside a beating heart can be used. The suture cutting device can include an elongated body having a lumen, a wall member extending into the lumen, and a knot-receiving chamber defined by a first area on a first side of the wall member. The wall member defines a channel therethrough dimensioned to permit passage of a suture and to prevent passage of a knot. A cutting implement is movably disposed in the lumen in a second area on a second side of the wall member opposite the first side. The cutting implement moves between a first position and second position to cut the suture. Movement of the cutting implement is limited to ensure that the cutting implement does not cut through the suture knot.